

A New Genus and Five New Species of Neotropical Tryphoninae (Hymenoptera: Ichneumonidae)

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Abstract.—A new genus of tryphonine ichneumonid, *Boethella* Bennett, n. gen. is described from the Neotropics. Synapomorphies are provided which support the sister group relationship of *Boethella* and *Boethlus* Foerster (Tryphonini) (the latter known from the Holarctic, Neotropical and Ethiopian regions). *Boethella darlingi* Bennett, n. sp. is described from eastern Brazil, *B. canilae* Bennett, n. sp. (type species) is described from southern Mexico to eastern Brazil, *B. hubleyi* Bennett, n. sp. is described from southeastern Brazil, *B. guidottiae* Bennett, n. sp. is described from western and central Brazil and *B. curriei* Bennett, n. sp. is described from Peru.

The latest survey of the family Ichneumonidae (Yu and Horstmann 1997) listed 21,805 described extant species classified into 1485 genera. These genera are assigned to 36 or 37 extant subfamilies depending on opinion (Wahl 1990, Yu and Horstmann 1997, Gauld 2000, Gauld and Wahl 2000). Some studies have attempted to elucidate the subfamily relationships (Wahl 1991, Wahl and Gauld 1998, Quicke *et al.* 2000); however, to date, no complete subfamily phylogeny is available for the Ichneumonidae. A recent study of one subfamily, the Tryphoninae, was undertaken in order to ascertain its placement within the family (Bennett 2002). In the process of this study, two new genera were discovered, one of which is described below. The other new genus from the tribe Oedemopsini will be described elsewhere allowing a full discussion of the characters and relationships of the 12 extant oedemopsine genera.

The subfamily Tryphoninae comprises 1170 described species (Yu and Horstmann 1997) assigned to 53 described genera in seven tribes (Bennett 2002). The subfamily is cosmopolitan with its centre of

diversity in the Holarctic Region (Kasparyan 1973). Tryphonines are koinobiont ectoparasitoids of lepidopterans and sawflies of the families Xyelidae, Tenthredinidae, Cimbicidae, Diprionidae and Argidae. They exhibit the uniquely derived trait of bearing eggs that travel down the outside of the ovipositor (Kasparyan 1973) (although this trait is unknown in the Idiogrammatini). The apical end of the stalk (which bears an anchor in most genera) travels down the inside of the ovipositor so that the body of the egg is suspended by the stalk ventral to the ovipositor. This anchor is pushed through the host integument during oviposition, thereby holding the egg in place until hatching. Females of most genera of tryphonines have the habit of bearing an egg on their ovipositor while searching for their hosts (Kasparyan 1973) which provides an incontrovertible character to identify them as tryphonines. Male tryphonines and females that do not carry eggs externally during host searching (e.g. the Phytodietini) are more difficult to recognize because the subfamily is relatively heterogeneous in structure with some taxa re-

sembling ctenopelmatines, whereas others resemble phygadeuontine cryptines, ban-chines or ophionines.

During studies at the American Entomological Institute (AEIC), I found a series of Neotropical specimens set aside by Henry Townes labeled "New Genus near *Boethus*". Two of these putative new species were included in a cladistic analysis of tryphonine generic relationships (Bennett 2002) to examine their status and their hypothesized relatedness to *Boethus*. The cladistic analysis verified the generic status of this new genus as well as its sister group relationship with *Boethus* (see Bennett 2002, Bennett in prep. and below). The present paper describes this new taxon as *Boethella* Bennett, n. gen., the 54th genus of the Tryphoninae (37th genus of the tribe Tryphonini).

MATERIALS AND METHODS

Specimens were borrowed from and are deposited in the American Entomological Institute, Gainesville, FL, USA (AEIC) (D. Wahl) and the Canadian National Collection, Ottawa, Canada (CNCI) (J. Huber). Examination of other major ichneumonid collections (e.g. INBio Costa Rica and The Natural History Museum, London) did not reveal more specimens of this genus.

Morphological terms follow Townes (1969) with some modifications: supra-antennal area for 'frons', supraclypeal area for 'face', malar space for 'cheek', epicnemial carina for 'prepectal carina' and laterotergites for 'epipleura'. MS1, MS2 refers to metasomal segments 1, 2 etc. T1 etc. refers to the tergites of metasomal segments 1 etc. and S1 etc. refers to the sternites of metasomal segment 1, etc. Wing venation terms follow the Comstock-Needham system as updated by Ross (1936) and incorporates the recommendations of Goulet and Huber (1993) except for naming of the vein that forms the distal edge of fore wing cell 1+2Rs (the 'areolet' of Townes 1969) which is referred to

as vein 3rs-m in accordance with Gauld (1997).

TAXONOMIC PLACEMENT

The strongest evidence that a taxon belongs to the Tryphoninae is that its females bear stalked eggs that travel down the outside of the ovipositor. The egg of *Boethella* is not known, therefore the placement of *Boethella* in the Tryphoninae is not certain. Most adult tryphonines exhibit the following characters: clypeus with an apical fringe of hairs; cell 1 + 2Rs (areolet) of fore wing triangular to subrectangular; spiracle of T1 anterior to middle; T1 with a glymma present; dorsal valve of ovipositor high (not strongly tapered) and un-notched subapically. Of these characters, *Boethella* possesses the clypeal fringe of hairs (albeit sparse) and the high, un-notched ovipositor (Fig. 7). The latter character precludes the placement of *Boethella* in the Ctenopelmatinae. In addition, the areolet of the fore wing of *Boethella* (Fig. 1) resembles other tryphonines which have an open areolet (i.e., if the areolet were closed, it would be triangular, not pentagonal as in cryptines or ichneumonines or rhombic as in mesochorines). On the basis of these three characters, *Boethella* fits best in the subfamily Tryphoninae (compared to all other extant subfamilies), despite its apomorphic structure of T1 (i.e., glymma absent and spiracle positioned posteriorly which is the condition found in cryptines and ichneumonines). It should be noted that *Boethella* is not the only genus of tryphonine with the latter two character states (e.g., *Sphinctus* Gravenhorst and *Ankylophon* Gauld).

Boethella can further be assigned to the tribe Tryphonini because of its apomorphic pectinate tarsal claws that within the Tryphoninae are known only in the tribes Tryphonini, Exenterini (= the *Exenterus* group of genera, see Bennett 2002), Sphinctini and Phytodietini. *Boethella* does not possess any apomorphies that would place it in either of the latter two tribes

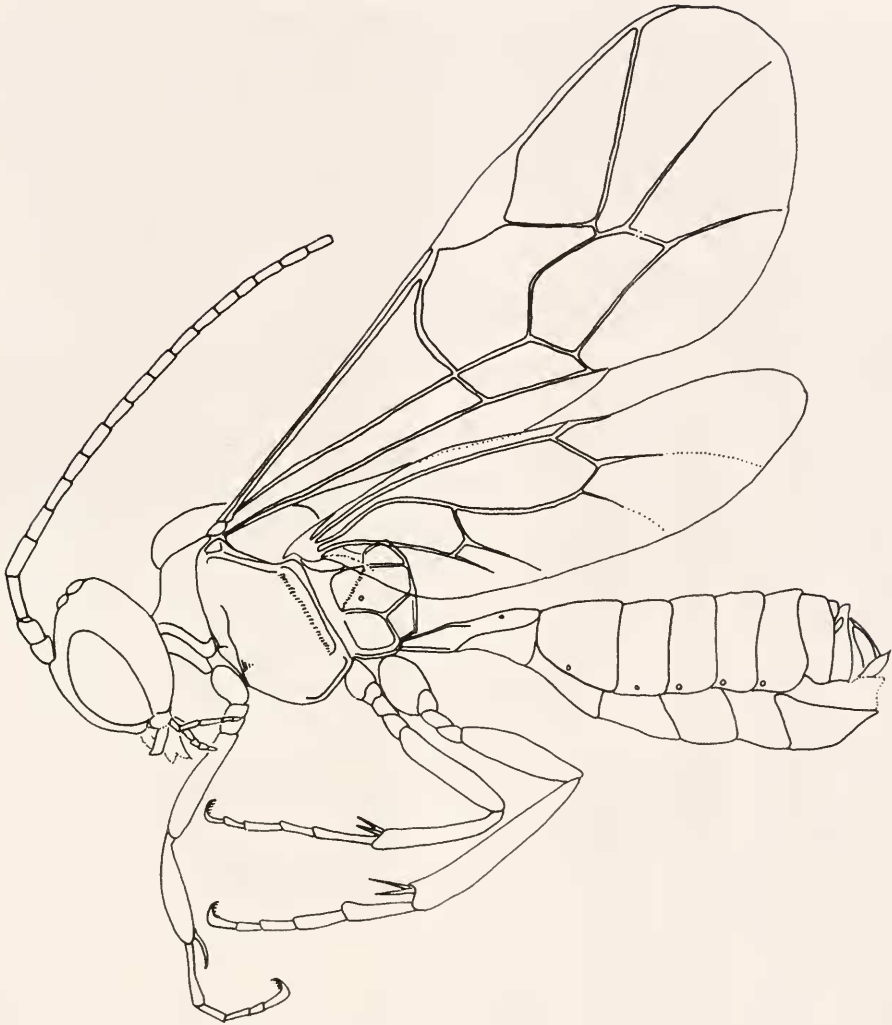


Fig. 1. *Boethella canilae*, holotype female, habitus.

(e.g., the strongly pointed apical edge of the clypeus in the Sphinctini or the loss of propodeal carinae in the Phytodietini). *Boethella* also cannot be assigned to the Exenterini because it has paired tibial spurs on both the middle and hind legs (the Exenterini have the autapomorphies of only one spur on the middle leg and no spurs on the hind leg).

The sister group relationship of *Boethella* and *Boethus* is supported by the following synapomorphies: occipital carina absent; epomia absent; notauli absent; fore wing

vein 2m-cu with one bulla; fore wing vein 3rs-m absent (areolet open); T1 petiolate; spiracle of T1 in posterior 0.4. A complete cladistic analysis describing character polarities and the relationships of all tryphonine genera including *Boethus* and *Boethella* is given in Bennett (2002) and Bennett (in prep.). *Boethella* can be distinguished from *Boethus* by the former's possession of propodeal, epicnemial and submetapleural carinae (all of which are absent in *Boethus*). In addition, the glymma is absent in *Boethella* (present in *Boe-*

tlus). *Boethella* is exclusively Neotropical and the majority of species of *Boethus* are known from the Neotropical and southern Nearctic regions (Townes *et al.* 1992); however, several Ethiopian species of *Boethus* are known (Scaramozzino 1991) as well as one Palaearctic species (Kasparyan 1973).

***Boethella* Bennett, n. gen.**

Type species.—*Boethella canilae* Bennett, by original designation.

Diagnosis.—Distinguished from other genera of tryphonines by the combination of: 1) occipital carina absent; 2) propodeal carinae present (Fig. 6). In addition, the ovipositor of *Boethella* is distinctive within the Tryphoninae (slightly upcurved with a high, wide, apically rounded dorsal valve that strongly overlaps the ventral valve medially) (Fig. 7).

Description.—Fore wing length 2.9 to 4.8 mm; clypeus slightly rounded in profile, without a transverse line separating it into dorsal and ventral faces, apical margin truncate to slightly rounded in anterior view, strongly impressed laterally (Figs. 2 and 3) without medial paired tubercles (medial notch absent), clypeal fringe of hairs present, but sparse; malar space obliterated (mandibular socket contiguous with ventral edge of eye) (Fig. 2) except in *B. darlingi* space is 0.5 times basal width of mandible (Fig. 3); lower mandibular condyles separated by distance greater than distance of inner eye margins at level of clypeal foveae; mandible with teeth subequal in width and height, moderately convex in cross-section near base; labio-maxillary complex moderately elongate, glossae visible in anterior view in most specimens (Fig. 1); occipital carina absent; postgena without a tooth; supra-antennal area without a horn or carina; antennal sockets separated by distance greater than 0.5 diameter of socket; eyes without prominent setae; epomia absent (Fig. 1); dorso-posterior region of pronotum not strongly thickened in dorsal view; epicnemial carina present, not dorsally curving toward

anterior edge of mesopleuron (Figs. 1, 4–5); auxiliary carina of mesopleuron either long and joining epicnemial carina (Figs. 4–5) or short and not joining (Fig. 1); sternaulus present (Figs. 1, 4–5); subtegular ridge slightly curving out laterally, not produced into a vertical lamella that nearly reaches tegula when tegula is down; notauli absent; projection on posterolateral edge of mesoscutum absent; carinae of scutellum present at base only; propodeal carinae all present except lateral longitudinal carinae absent (Fig. 6), medial longitudinal carinae strongly raised, medial portion of posterior transverse carina weak; submetapleural carina present; fore tibia without an anterior, apical tooth; fore tibial spur evenly curved; middle and hind trochanters two segmented; middle and hind tibiae each with two spurs; tarsal claws pectinate to apex or nearly to apex (Fig. 1); fore wing vein 3rs-m absent (Fig. 1); fore wing vein 2m-cu weakly to strongly inclivous with one bulla (Fig. 1); wings hyaline to moderately infumate; T1 petiolate (Fig. 6) with spiracle at 0.6 to 0.75, dorsal longitudinal carinae absent (Fig. 6), dorsolateral longitudinal carinae present but not extending to spiracle (Fig. 1); glymma of T1 absent (Fig. 1) (slight depression present ventral to dorsolateral longitudinal carina in some specimens, but not a glymma); T1 and T2 not fused, their sculpture impunctate; S1 not fused to T1, membranous portion of S1 not or only slightly projecting lateral to sclerotized portion of T1; T2 without a transverse postmedian groove or oblique grooves delineating the anterolateral corners; laterotergites of MS2 to MS4 separated from tergites by a complete crease; T6 to T8 not strongly turned anteriorly under T5; ovipositor (only known in two species) shorter than apical depth of metasoma, moderately upcurved, dorsal valve thick and rounded apically, overlapping ventral valve laterally (Fig. 7).

Mature larva.—Unknown.

Egg.—Unknown.

Hosts.—Unknown. The sister genus *Boethius* has been reared from argid sawflies (Townes *et al.* 1992, Gauld 1997).

Distribution.—Southern Mexico, Peru and Brazil.

Species included.—Five species (see key and descriptions below).

Etymology.—*Boethella* is a modification of *Boethius* (which means “helper” in Greek) indicating its close relationship with this genus. Its gender is feminine.

KEY TO THE SPECIES OF *BOETHELLA* BENNETT

- 1 Malar space 0.5 times basal width of mandible (Fig. 3) (eastern Brazil) *darlingi* Bennett, n. sp.
- Malar space obliterated: dorsal edge of socket of mandible contiguous with ventral edge of eye (Fig. 2) 2
- 2(1) Mesopleuron with auxiliary carina short, not extending to epicnemial carina (Fig. 1) ... 3
- Mesopleuron with auxiliary carina extending from anterior edge and joining epicnemial carina slightly ventral to ventral edge of pronotum (Figs. 4 and 5) 4
- 3(2) Hind tibia brown. (Brazil to southern Mexico) *canilae* Bennett, n. sp.
- Hind tibia with basal 0.7 yellow, apical 0.3 brown (Brazil—Santa Catarina) *hubleyi* Bennett, n. sp.
- 4(2) Epicnemial carina extending dorsal to point of union of auxiliary carina by at least the length of auxiliary carina (Fig. 4). T4 predominantly brown, yellow laterally and with a yellow medial longitudinal stripe or spot in some specimens (Peru) *curriei* Bennett, n. sp.
- Epicnemial carina extending dorsal to point of union of the auxiliary carina by much less than the length of auxiliary carina (Fig. 5), or not extending at all. T4 entirely yellow or yellow with a trace of brown in apical 0.2 and with a longitudinal brown or brown and white region in medial 0.3 (Brazil: Mato Grosso and Amazonas) *guidottiae* Bennett, n. sp.

Boethella darlingi Bennett, n. sp.

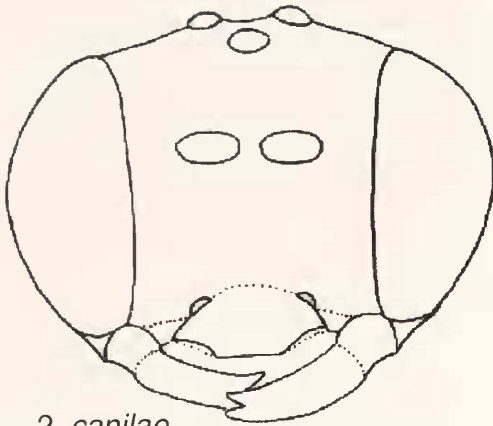
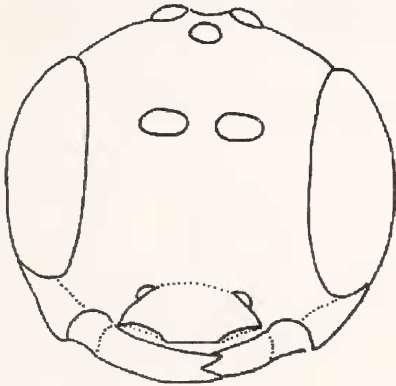
Fig. 3

Diagnosis.—Distinguished from other species of *Boethella* by having the malar space 0.5 times basal width of mandible (Fig. 3) (not zero times basal width).

Female.—Unknown.

Male (holotype).—Fore wing length 3.5 mm; medial part of apical edge of clypeus slightly convex in anterior view, without emargination; groove between clypeus and supra-clypeal area weak laterally so that base of clypeus is relatively flat; malar space 0.5 times basal width of mandible; antenna with fourteen flagellomeres; auxiliary carina of mesopleuron short, not joining epicnemial carina; abscissa of fore wing vein M between 3rs-m and 2m-cu

greater than 0.75 length of 2m-cu; spiracle of T1 posterior to 0.7. Orange; antenna except anterior side of apical two to three flagellomeres, apical 0.2 of mandible, posterior of occiput medial to inner margin of eyes, area between ocelli, pronotum along dorsal edge, lateral lobes of mesoscutum and anterior 0.3 of medial lobe, scuto-scutellar groove, ventral edge of scutellum, mesopleuron except dorsoanterior quarter, mesosternum except small region medio-posteriorly; dorsal and ventral edges of metapostnotum, anterior groove of propodeum including base of medial longitudinal carinae, ventroanterior corner of metapleuron; apical 0.8 of hind tibia, hind tarsus, wing veins and stigma, T2 except anterior 0.2, lateral 0.2 and posterior 0.2,

2. *canilae*3. *darlingi*

Figs. 2-3. *Boethella* spp. male, anterior view of head. 2, *B. canilae*, paratype. 3, *B. darlingi*, holotype.

T3 to T7 except posterior 0.2 brown; clypeus, ventral 0.6 of supraclypeal area, ventral 0.5 of gena, propleuron, ventral 0.2 of pronotum, fore leg except coxa, entire middle leg, coxa, trochanter, femur and basal 0.2 of tibia of hind leg, T1, anterior 0.2 and lateral 0.2 of T2 yellow; dorsal 0.8 of pronotum except dorsal ridge and medial region of petiolar region of propodeum brownish orange; mouthparts except apical 0.5 of mandible, anterior side of apical two to three flagellomeres, fore coxa and metasomal sternites white; posterior 0.2 of T2 to T6 translucent white; gonoforceps light brown; wings strongly infumate basally, fading to hyaline apically.

Material.—Holotype ♂: BRAZIL, Rio de Janeiro State, Guanabara, Rio Grande, Represa, 1-31.iii.1972 (*Alvarenga*) (AEIC).

Etymology.—This species is named in honour of Dr. D. C. Darling, senior curator at the Royal Ontario Museum, in recognition of his long-standing appreciation of the magnificence of the family Ichneumonidae.

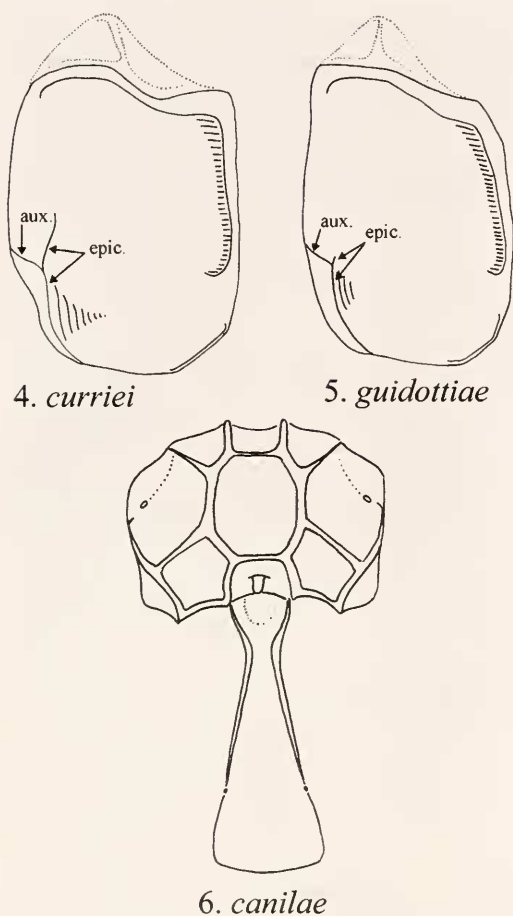
Comments.—Known only from the holotype. *Boethella darlingi* may be the sister species of the other four species of *Boethella* because it lacks the obliterated malar space that is synapomorphic of these four species.

Boethella canilae Bennett n. sp.

Figs. 1-2, 6-7

Diagnosis.—Distinguished from other species of *Boethella* by the combination of all: 1) malar space obliterated (mandibular socket contiguous with ventral edge of eye) (Fig. 2); 2) auxiliary carina of mesopleuron short, not joining epicnemial carina (Fig. 1); 3) hind tibia brown.

Female (holotype).—Fore wing length 4.1 mm; medial part of apical edge of clypeus slightly and broadly emarginate; groove between clypeus and supraclypeal area moderately strong laterally; malar space obliterated (dorsal edge of mandibular socket contiguous with ventral edge of eye) (Fig. 2); antenna with sixteen flagellomeres; auxiliary carina of mesopleuron short, not joining epicnemial carina (Fig. 1); abscissa of fore wing vein M between 3rs-m and 2m-cu less than 0.5 length of 2m-cu; spiracle of T1 anterior to 0.7. Yellowish orange; apical 0.2 of mandible, antenna except apical flagellomere, occiput posterolaterally, posteriorly and in a longitudinal stripe extending posteriorly from between lateral ocelli, dorsal 0.8 of pronotum, tegula, anterior 0.5 of medial lobe mesoscutum and all of lateral lobes, ventral 0.7 of mesopleuron except anterior to epicnemial carina and in ventroposterior corner, mesosternum except medial 0.3, metanotum, hind tibia and tarsus,



Figs. 4–6. *Boethella* spp. 4–5, Male, lateral view of mesopleuron: aux. = auxiliary carina, epic. = epicnemial carina. 4. *B. curriei*, paratype. 5. *B. guidottiae*, paratype male. 6. *B. canilae*, holotype female, dorso-posterior view of propodeum and first metasomal segment.

wing veins and stigma, spot occupying posterior 0.5 and lateral 0.3 of T2, T3 to T7 except posterior 0.2 and triangular-shaped medial portions of T4 to T7 brown; head (except antenna, mouthparts and occiput as noted above), ventral 0.2 of pronotum, posterior 0.5 of medial lobe of mesoscutum, scutellum, dorsal 0.3 of mesopleuron, anterior to epicnemial carina and in ventroposterior corner orange; posterior 0.2 of T2, posterior 0.2 and lateral 0.2 of T3 to T7, medial triangular portions of T4 to T7, metasomal epipleura and sterna including



Fig. 7. *Boethella canilae*, holotype female, lateral view of posterior of metasoma showing ovipositor: vent. = ventral valve of ovipositor, dors. = dorsal valve of ovipositor, sheath = ovipositor sheath, hyp = hypopygium.

hypopygium whitish yellow; dorsal valve of ovipositor, ovipositor sheath and membranes at base of ovipositor white; apical flagellomere light brown; membrane of wings hyaline with a trace of infumation apically in fore wing.

Male.—Same as female except fore wing length 2.9 to 4.8 mm and antenna with fifteen to eighteen flagellomeres. Colour variations: Dark morph as female, except all flagellomeres brown, occiput with less brown posterolaterally, apical 0.2 of hind tibia brown in some specimens and T2 completely brown except orange in a triangular region basomedially and yellowish white in posterior 0.2; gonoforceps light brown. Light morph as female except clypeus, supraclypeal area and orbits yellowish orange; occiput, pronotum, mesoscutum, scutellum and mesopleuron completely orange; T2 entirely brown except anterolateral corners (or entire anterior 0.1) orange, posterior 0.2 yellowish-white; gonoforceps light brown. Inter morph as

light morph except apical flagellomere only light brown at apex; lateral lobes of mesoscutum completely brown; dorsal 0.5 of pronotum orange brown.

Material.—Holotype ♀, BRAZIL, Espirito Santo, Castelo, 1–30.xi.1976 (*M. Alvarenga*) (AEIC). Paratypes. 3 ♂, same data as holotype; 1 ♂, São Paulo State, São José do Barreiro, Serra da Bocaina, 22°37'59"S, 44°34'59"W, 1650 m, 1–30.xi.1969, (*Alvarenga and Seabra*) (AEIC); 1 ♂, MEXICO, Chiapas, 10 km south of Ocozocoautla, 1220 m, 2.viii.1962. (*H. Milliron*) (CNCI).

Etymology.—This species is named in honour of Dr. C. Canil in recognition of her exemplary volunteer work at the Royal Ontario Museum.

Comments.—*Boethella canilae* is quite variable in colour with the pronotum, mesopleuron and mesoscutum ranging from predominantly brown to completely orange (in same collection site). The male specimen from Mexico is smaller than the other males (fore wing = 2.9 mm) but appears to be conspecific (similar to the light morph males except that T2 and T3 are orange brown instead of brown). The specimen is in relatively poor condition and newer material from Mexico may reveal structural differences that distinguish this population as a distinct species.

***Boethella guidottiae* Bennett, n. sp.**

Fig. 5

Diagnosis.—Distinguished from other species of *Boethella*, by the combination of: 1) auxiliary carina of mesopleuron long, joining epicnemial carina, the latter extending only slightly dorsal to point of union with auxiliary carina or not extending (Fig. 5); 2) T4 predominantly yellow.

Female (holotype).—Fore wing length 4.0 mm; medial part of apical edge of clypeus with a slight, narrow emargination; groove between clypeus and supraclypeal area moderately strong laterally; malar space obliterated (dorsal edge of mandibular socket contiguous with ventral edge of eye); antenna with seventeen flagello-

meres; auxiliary carina of mesopleuron long, joining epicnemial carina, the latter extending only slightly dorsal to point of union with auxiliary carina (Fig. 5); abscissa of fore wing vein M between 3rs-m and 2m-cu less than 0.5 length of 2m-cu; spiracle of T1 anterior to 0.7. Yellow; basal 0.5 of mandible, apical five flagellomeres of antenna, medial 0.5 of propleuron, medial 0.2 of mesosternum, entire metapleuron, coxa and trochanter of fore and middle legs, tarsus of fore leg whitish yellow; posterior 0.2 of T2 to T5 as well as lateral edges ventral to spiracle, medial triangular region (widest in posterior) on T3 to T7, metasomal sternites, hypopygium except for a triangular stripe just ventral to dorsal edge, membranes around ovipositor white; scape, pedicel, apical 0.3 of hind tibia, hind tarsus, stigma, apical wing veins and narrow border around medial triangular regions of T3 to T7 yellowish brown; supra-antennal area, vertex, occiput, dorsal 0.3 of gena, dorsal 0.5 of pronotum and mesoscutum yellowish orange; apical 0.2 of mandibles, flagellum except apical five flagellomeres, basal wing veins brown; wing membrane weakly to moderately infumate anteriorly and apically, hyaline posteriorly and subapically.

Male.—Similar to female except apical edge of clypeus slightly convex to truncate medially, (emargination present in only some male specimens); fore wing length 3.2 to 4.8 mm; antenna with sixteen to nineteen flagellomeres. Colour variations: Light morph similar to female except apical two to seven flagellomeres whitish yellow and in most specimens, medial 0.5 of T6 and all of T7 yellowish brown; gonoforceps whitish yellow. Dark morph orange; clypeus, mouthparts except apical 0.6 of mandible, ventral 0.5 of pronotum, propleuron, metapleuron, propodeum, fore leg, middle leg, coxa, trochanter and femur of hind leg yellow; apical two to four flagellomeres and sternites of metasoma whitish yellow; all structures that are brown in female are also brown in

dark morph male as are all wing veins and stigma; T2 to T7 vary from yellow to light brown, tending to be more brown medially and posteriorly, apical 0.1 to 0.2 of each tergite may be white or uniform with rest of tergite, some specimens are also similar to holotype with medial 0.3 to 0.5 of T3 to T7 with unpigmented, triangular regions which may indicate incomplete sclerotization of these segments (a longitudinal, medial suture line is also present on the posterior tergites in these specimens); basal 0.7 to 0.8 of hind tibia may be yellow to brownish yellow (but base always lighter than apical 0.2 which is brown); gonoforceps yellowish orange to whitish brown.

Material.—Holotype ♀, BRAZIL, Mato Grosso, Sinop, 12°31'S, 55°37'W, Malaise Trap, 1–31.x.1974 (*M. Alvarenga*) (CNCI). Paratypes. 5 ♂, same data as holotype except one from 1–31.x.1976 and three 1–31.xi.1975; 3 ♂, same data as holotype except 1–31.x.1976 (AEIC); 2 ♂, Amazonas, 4°33'S, 71°38'W, 1–30.ix.1979 (*Alvarenga*) (AEIC).

Etymology.—This species is named in honour of Ms. A. Guidotti in recognition of her dedicated work as technician of the entomology collection of the Royal Ontario Museum.

***Boethella hubleyi* Bennett, n. sp.**

Diagnosis.—Distinguished from other species of *Boethella* by the combination of all: 1) malar space obliterated (mandibular socket contiguous with ventral edge of eye); 2) auxiliary carina of mesopleuron short, not joining epicnemial carina; 3) hind tibia yellowish orange in basal 0.7, brown apically.

Female (holotype).—Fore wing length 4.5 mm; medial part of apical edge of clypeus slightly and broadly emarginate; groove between clypeus and supraclypeal area moderately strong laterally; malar space obliterated (dorsal edge of mandibular socket contiguous with ventral edge of eye); antenna with seventeen flagello-

meres; auxiliary carina of mesopleuron short, not joining epicnemial carina; abscissa of fore wing vein M between 3rs-m and 2m-cu less than 0.5 length of 2m-cu; spiracle of T1 anterior to 0.7. Yellowish orange; apical 0.2 of mandible, antennae except apical two flagellomeres, anterior 0.5 of medial lobe of mesoscutum, lateral lobe of mesoscutum except anterior, lateral and medial edges, mesopleuron, mesosternum except medial 0.2, apical 0.3 of hind tibia, hind tarsomeres, wing veins, stigma and T3 to T7 except posterior 0.2 and lateral 0.1 to 0.2 brown; occiput medioposteriorly, pronotum, tegula, posterior 0.5 of medial lobe of mesoscutum, anterior, lateral and medial edges of lateral lobes of mesoscutum, scutellum, T2, lateral 0.2 of T3, lateral 0.1 of T4 to T7 orange; palpi, basal 0.8 of mandibles, fore and middle coxa and trochanter and anterior 0.7 of T1 whitish yellow; apical two flagellomeres light brown; membrane of wings hyaline with a trace of infumation apically in fore wing.

Male.—Unknown.

Material.—Holotype ♀, BRAZIL, Santa Catarina, 27°11'S, 52°23'W, 300–500m, 25.viii.1962 (*F. Plaumann*) (CNCI).

Etymology.—This species is named in honour of Mr. B. Hubley in recognition of his tireless work as collection manager of entomology at the Royal Ontario Museum.

Comments.—Known only from the holotype. Colours in fresh material may be more contrasting because of the age and condition of the holotype at time of description. *Boethella hubleyi* is similar to *B. canilae* but the former can be distinguished by the bi-coloured hind tibia. Similar colouration of the hind tibia is only known in *B. guidottiae*, however this can be distinguished from *B. hubleyi* by the structure of the epicnemial carina.

***Boethella currici* Bennett, n. sp.**

Fig. 4

Diagnosis.—Distinguished from other species of *Boethella* by the combination of:

1) the auxiliary carina of mesopleuron long, joining epicnemial carina, the latter extending dorsal to point of union of auxiliary carina by at least the length of auxiliary carina (Fig. 4); 2) T4 predominantly brown.

Female.—Unknown.

Male.—Fore wing length 3.2 to 3.8 mm; medial part of apical edge of clypeus slightly and broadly emarginate; groove between clypeus and supraclypeal area moderately strong laterally; malar space obliterated (dorsal edge of mandibular socket contiguous with ventral edge of eye); antenna with sixteen flagellomeres; auxiliary carina of mesopleuron long, joining epicnemial carina, the latter extending dorsal to point of union of auxiliary carina by at least the length of auxiliary carina; abscissa of fore wing vein M between 3rs-m and 2m-cu less than 0.5 length of 2m-cu; spiracle of T1 anterior to 0.7. Yellowish orange; apical 0.2 of mandible, antenna except for apical one to two flagellomeres, hind tibia (except in basal 0.2 in some specimens), hind tarsus, wing veins and stigma brown (ventral part of stigma light brown in some specimens); dorsal 0.5 of head, dorsal 0.5 of pronotum and mesoscutum orange (head and pronotum blend uniformly from orange dorsally to yellowish orange ventrally); basal 0.8 of mandibles, palpi, fore and middle legs, propodeum, lateral 0.2 of T2 to T4, posterior 0.1 to 0.2 of T3 to T4 and thin, medial longitudinal stripe on T4 to T7 yellow; tegula, medial 0.6 of T4, (except for posterior 0.1 to 0.2 and medial stripe), medial 0.8 of T5 (except for medial stripe), all of T6 and T7 (except for medial stripe) yellowish brown; apical one to two flagellomeres and gonoforceps whitish brown; sternites of metasoma yellowish white; glossa white; wings strongly infumate basally and dorsally, hyaline subapically and posteriorly and weakly infumate apically. Colour variation: specimen caught 1–15.x.1962 is lighter than other two specimens—structures described above as or-

ange are more yellowish orange and yellowish orange structures more yellow; hind tibia yellow in basal 0.2, yellowish brown medially, brown apically; medial longitudinal stripe on T4 to T7 less prominent; T4 completely yellowish brown except for anterolateral corners and posterior 0.2.

Material.—Holotype ♂, PERU, Cusco, near Marcapata, Avispas, 1–30.ix.1962 (*L. Peña*) (AEIC). Paratypes. 1 ♂, same data as holotype except 1–15.x.1962; 1 ♂, same as holotype except 20–30.ix.1962.

Etymology.—This species is named in honour of Dr. D. C. Currie, curator and keeper of black flies at the Royal Ontario Museum, in recognition of his unfathomable appreciation of fried spam sandwiches.

Comments.—The specimen caught 1–15.x.1962 is not only lighter in colour than the other two specimens, but also has a much less pronounced sternaulus and a weaker, shorter epicnemial carina. Additional material is necessary to determine if these differences are intra- or interspecific.

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